

Understanding Depth of Knowledge (DOK) for Use in Creating Classroom Assessments

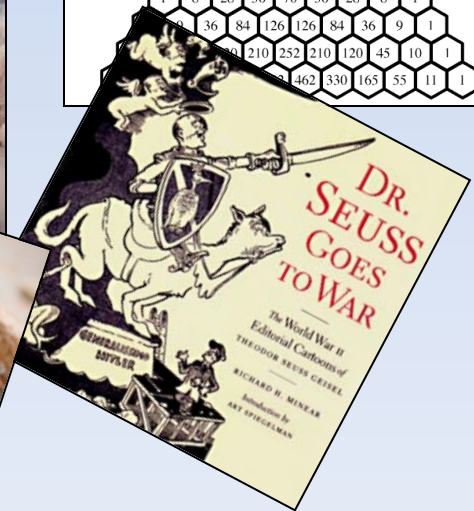
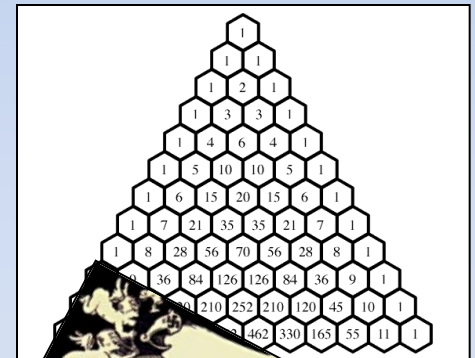
Just What Really is “Depth of Knowledge”?



Depth of
Knowledge (DOK)
is a scale of
cognitive demand.

Why DOK IS Important!

- Teachers of all subjects at all grade levels need to understand all DOK levels.



Why DOK IS Important!

- Instruction, assignments, and classroom assessments **must** incorporate the expectation of rigor for students associated with the DOK levels of all standards and objectives.



Depth of Knowledge

Level 1 Recall

Recall of a fact, information, or procedure.

Level 2 Skill/Concept

Use information or conceptual knowledge, two or more steps, etc.

Level 3 Strategic Thinking

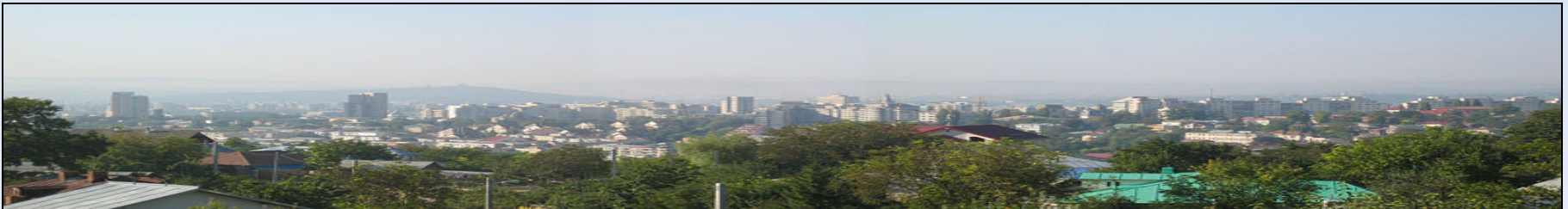
Requires reasoning, developing plan or a sequence of steps, some complexity, more than one possible answer.

Level 4 Extended Thinking

Requires an investigation, time to think and process multiple conditions of the problem.

Beginning at the Beginning:

- What DOK is can best be explained by saying first what DOK is NOT.
- DOK is not a verb.
- DOK is not about the “difficulty” of the task.
- DOK is not a grade-level indicator.



It's NOT about the verb...

The Depth of Knowledge is **NOT** determined by the verb (Bloom's Taxonomy), but by the context in which the verb is used and the depth of thinking required.



Verbs are not always used appropriately...

Words like explain or analyze have to be considered in context.

- “Explain to me where you live” does not raise the DOK of a simple rote response.
- Even if the student has to use addresses or landmarks, the student is doing nothing more than recalling and reciting.

DOK is About *What Follows the Verb*

What comes after the verb is more important than the verb itself.

“Analyze this sentence to decide if the commas have been used correctly” does not meet the criteria for high cognitive processing.

Rationale: The student who has been taught the rule for using commas is merely using the rule.

Same Verb—Three Different DOK Levels

DOK 1– Describe three characteristics of metamorphic rocks. (Requires simple recall)

DOK 2– Describe the difference between metamorphic and igneous rocks. (Requires cognitive processing to determine the differences in the two rock types)

DOK 3– Describe a model that you might use to represent the relationships that exist within the rock cycle. (Requires deep understanding of rock cycle and a determination of how best to represent it)

DOK is NOT About Difficulty

Who was the 16th president of the United States?

If all of you know the answer, this question is an *easy question*.



Who was the 14th president of the United States?

If most of you do not know the answer, this question is a *difficult question*.

DOK is NOT About Difficulty

What is the capital of the Iraq?

If all of you know the answer,
this question is an *easy question*.



What is the capital of the Guyana?

If most of you do not know the answer,
this question is a *difficult question*.

DOK is About Intended Outcome, NOT Difficulty!

DOK is a reference to the complexity of mental processing that must occur to answer a question, perform a task, or generate a product.



When Assigning the DOK Level, Consider . . .

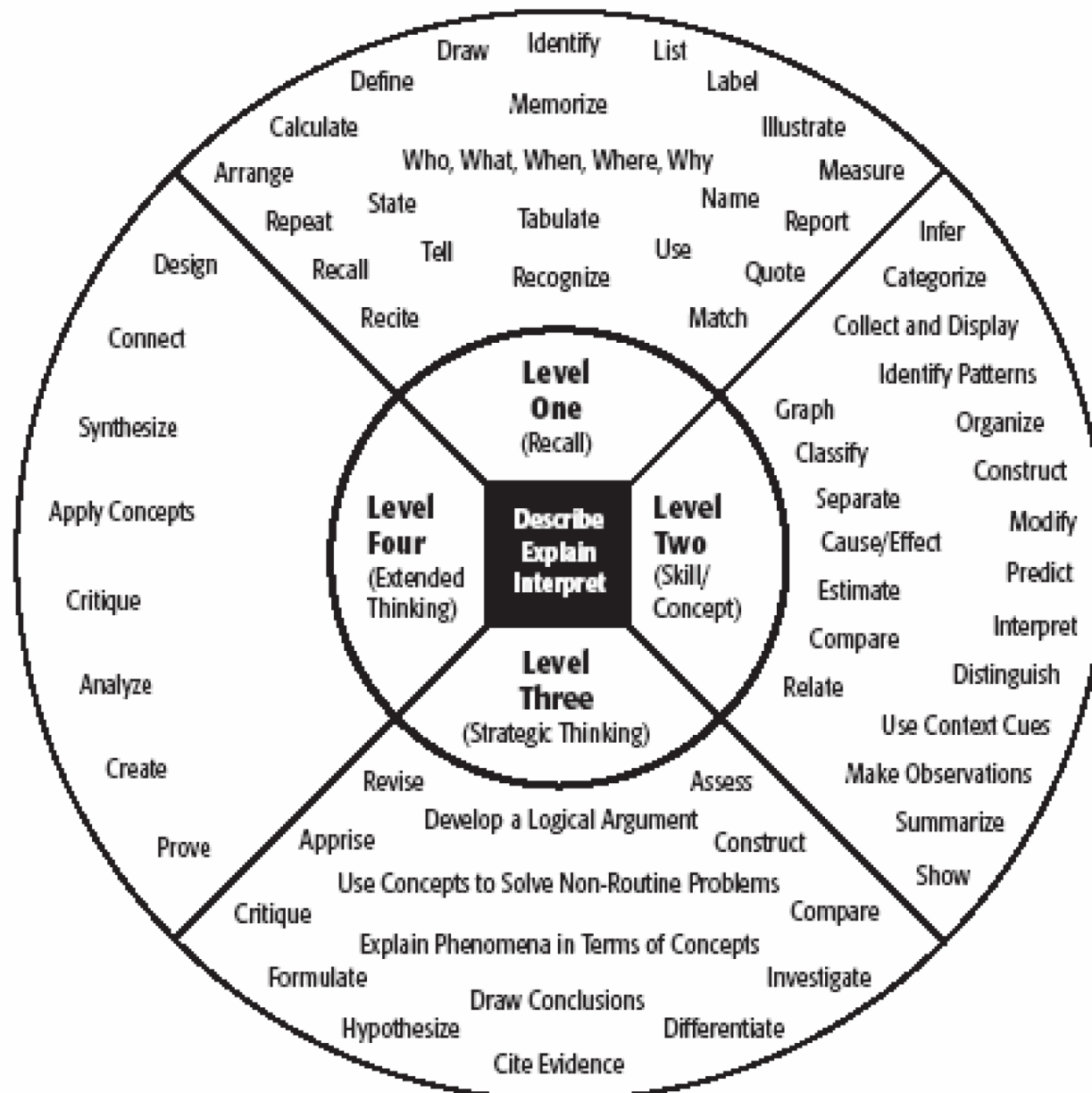
- the level of work students are most commonly required to perform.
- the *complexity* of the task, rather than its *difficulty*.

The DOK level describes the kind of thinking involved in a task, not the likelihood that the task will be completed correctly.

Webb's Four Levels of Cognitive Complexity

- **Level 1:** Recall and Reproduction
- **Level 2:** Skills & Concepts
- **Level 3:** Strategic Thinking
- **Level 4:** Extended Thinking

Depth of Knowledge (DOK) Levels



DOK Level 1: Recall and Reproduction

- Requires **recall of information**, such as a fact, definition, term, or performance of a simple process or procedure
- Answering a Level 1 item can involve following a simple, well-known procedure or formula

DOK 1 Activities

Recall details of a story (events, character, plot, setting, etc.).

Identify specific information contained in graphics.

Conduct basic mathematical calculations.

Label locations on a map.

Represent in words or diagrams a scientific concept or relationship.

Perform routine procedures like measuring length or using punctuation marks correctly.

Describe the features of a place or people group.

Identify *who*, *what*, *where*, *when* of a particular event or issue, list attributes, or define the meaning of terms.

Skills/Concepts: DOK Level 2

- Includes the engagement of some mental processing **beyond recalling or reproducing a response**
- Items require students to make some decisions as to how to approach the question or problem
- Actions imply more than one **mental or cognitive process/step**

DOK 2 Activities

Identify and summarize the major events of a narrative.

Use context cues to identify the meaning of unfamiliar words.

Solve routine multi-step problems.

Describe the cause and effect of a particular event or issue.

Identify patterns in events or behavior.

Compare/contrast people, places, events, and concepts.

Convert information from one form to another form.

Formulate a routine problem/issue given data and conditions.

Organize, represent, and interpret data.

Strategic Thinking: Level 3

- Requires **deep understanding** exhibited through planning, using evidence, and more demanding **cognitive** reasoning
- The cognitive demands are **complex and abstract**
- An assessment item that has more than one possible answer and requires students to **justify the response** would most likely be a Level 3

DOK 3 Activities

- Support ideas, thesis, or predictions with specific evidence, details, and examples.
- Use *voice* appropriate to purpose and audience.
- Identify research questions and design investigations for a scientific problem.
- Develop a scientific model for a complex situation.
- Solve a multiple-step problem and provide support with a mathematical explanation that justifies the answer
- Determine the author's purpose and describe how it affects the interpretation of a reading selection.
- Apply a concept in another context.
- Draw conclusions from a variety of sources of information.
- Make connections across time and place to explain a concept or "big idea."

Extended Thinking: Level 4

- Requires high cognitive demand and is **very complex**
- Students are expected to make connections, relate ideas within the content or among content areas, and select or devise one approach among many alternatives on how the situation can be solved
- Due to the complexity of cognitive demand, DOK 4 often requires an extended period of time

DOK 4 Activities

Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results and/or solutions.

Analyze and synthesize information from multiple sources.

Describe and illustrate how common themes are found across texts from different cultures.

Design a mathematical model to inform and solve a practical or an abstract situation.

Design a thesis, conduct an investigation using multiple sources, analyze and synthesize the evidence in a written report (essay) or multimedia presentation, and present to an audience.

BLOOM'S TAXONOMY

KNOWLEDGE / REMEMBERING

"The recall of specifics and universals, involving little more than bringing to mind the appropriate material"

COMPREHENSION / UNDERSTANDING

"Ability to process knowledge on a low level such that the knowledge can be reproduced or communicated without a verbatim repetition."

APPLICATION / APPLYING

"Using information in another familiar situation."

ANALYSIS / ANALYSING

"Breaking information into parts to explore understandings and relationships."

SYNTHESIS and EVALUATION / EVALUATING and CREATING

"Putting together elements & parts to form a whole, then making value judgments about the method."

WEBB'S DOK

RECALL

Recall of a fact, information, or procedure (e.g., What are 3 critical skill cues for the overhand throw?)

SKILL/CONCEPT

Use of information, conceptual knowledge, procedures, two or more steps, etc.

STRATEGIC THINKING

Requires reasoning, developing a plan or sequence of steps; has some complexity; more than one possible answer

EXTENDED THINKING

Requires an investigation; time to think and process multiple conditions of the problem or task.

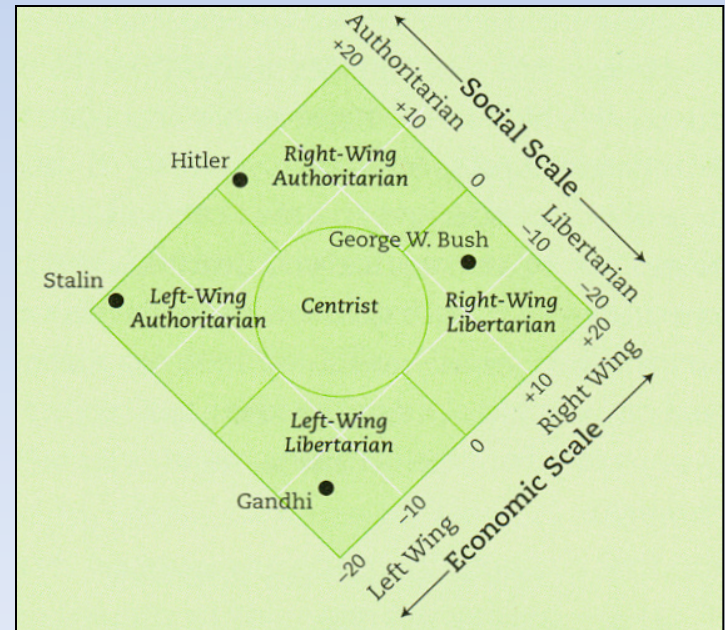
What Does DOK Look Like in the Classroom?

Level One (Recall) –
Name the
presidents of the
United States in
order.



What Does DOK Look Like in the Classroom?

Level Two (Skill/Concept) – Using the right and left political spectrum categorize the presidents of the 20th and 21st centuries according to their political standing.



What Does DOK Look Like in the Classroom?

Level Three (Strategic Thinking) –
Hypothesize how President Dwight D. Eisenhower would react to today's political situation.



What Does DOK Look Like in the Classroom?

Level Four (Extended Thinking) -
Analyze the strategies and effectiveness of George H. W. Bush's war strategies in the Persian Gulf with the war strategies of George W. Bush in Iraq.

